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### Reply to the Editor:

We thank Dr Raja for his supportive comments and we agree with the additional advantages offered by skeletonizing the internal thoracic artery (ITA) for grafting stated in his letter. In particular, the additional length gained by skeletonization is extremely helpful when the right ITA is used as an in situ graft to obtuse marginal branches of the circumflex coronary artery.<sup>1</sup>

Dr Raja correctly notes that skeletonization of ITAs requires more technical expertise and time than does conventional pedicled harvesting. Although the total operative times were similar for the skeletonized and conventional groups in our study,<sup>2</sup> skeletonization may add 10 to 20 minutes to the ITA harvesting time. The surgeons in our study felt proficient with skeletonization after approximately 20 ITA harvests. Injury to the ITA during this learning phase is a concern, but we did not record the frequency of ITA injury in our database. If an ITA graft is injured during harvesting, we can occasionally utilize the undamaged segment as a free graft. The surgeons who routinely perform skeletonization at our institution report a very low (<1%) incidence of ITA injury. Unfortunately, most studies in the literature do not report the incidence of injury to the ITA graft during skeletonization; however,

Nishida and colleagues<sup>3</sup> reported an incidence of 0.7%.

Dr Raja also raises the concern that manipulation of the ITA graft during skeletonization may contribute to an increased propensity toward graft spasm. Spasm of the ITA graft has been reported in the literature, and some institutions inject the ITA with papaverine to prevent spasm. However, intraluminal injection of vasodilating agents can itself lead to graft injury by pressurizing the artery, resulting in endothelial damage or dissection. Instead, we prefer to bathe skeletonized ITAs with topical papaverine. Although we do not actively record the incidence of postoperative ITA spasm in our institution, we do know that it is uncommon.

We believe that meticulous ITA skeletonization offers many advantages relative to pedicled harvesting, with an acceptably low risk of complications.

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### A lost opportunity To the Editor:

In the article "Neurodevelopmental Status at Eight Years in Children with Dextro-transposition of the Great Arteries: The Boston Circulatory Arrest Trial," Bellinger and colleagues<sup>1</sup> presented a sophisticated prospective randomized study, with an ex-

tensive data collection and analysis. However, they limited their investigations to "the two major methods of vital organ support, total circulatory arrest and low-flow cardiopulmonary bypass." I respectfully disagree with Bellinger and colleagues' decision, because they wasted a good opportunity by using a tremendous amount of effort and expertise to evaluate two methods already proven to provide suboptimal results. In my opinion, comparing total circulatory arrest and low-flow cardiopulmonary bypass is like comparing two different brands of cigarettes to evaluate whether one is less dangerous than the other.

There are already too many experimental and clinical studies reported in the literature on how to reduce the negative effects of hypothermia or flow reduction: metabolic derangement; endothelial lesions; and vascular, myocardial, neurologic, hematologic, and respiratory impairment.<sup>2,3</sup> Instead of investing their extraordinary resources in this type of research, Bellinger and colleagues could explore an alternative method of cardiopulmonary bypass, even if they do not consider it to be one of the "two major methods of vital organ support": normothermic high-flow cardiopulmonary bypass.<sup>3,4</sup> This method has already been supported by clinical experience with more than 1600 cases of surgery for congenital heart disease, including the arterial switch operation for neonates with transposition of the great arteries.<sup>4</sup>

The readers involved with the surgical treatment of children with congenital heart disease should be aware that we as surgeons are not obliged to choose between suboptimal methods of cardiopulmonary bypass, much as we are not obliged to choose among different brands of cigarettes if we are not smokers. There is the proven possibility of performing cardiopulmonary perfusion much closer to the physiologic state,<sup>4</sup> and research units like the one of this study could use their resources to compare the "two major methods of vital organ support" with a more physiologically compatible method.

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